



## King County

### Parks and Recreation Division

Department of Natural Resources and Parks  
King Street Center  
201 South Jackson Street, Suite 700  
Seattle, WA 98104-3855  
**206-477-4527** Fax 206-588-8011  
TTY Relay: 711

November 30, 2016

Lindsey Ozbolt  
Associate Planner  
Department of Community Development  
City of Sammamish  
801 228<sup>th</sup> Avenue SE  
Sammamish, WA 98075

RE: East Lake Sammamish Trail Inglewood Parking Lot, SSDP 2016-00414

Dear Ms. Ozbolt:

This letter is in response to your November 15, 2016 letter regarding King County's application for a Shoreline Substantial Development Permit ("SSDP") SSDP2016-00415 for the ELST Inglewood Parking Lot, SSDP 2016-00414. In this letter, you notified King County that the City of Sammamish ("City") had deemed the SSDP application incomplete.

Your letter notified King County that this permit application was incomplete and it listed as "Required Information" the items necessary for the City to deem the application complete. Included on that list was a requirement to provide a tree preservation plan and the water and sewer certificates. In addition, during our pre-application meeting, City staff requested information on illumination plans for this site. Enclosed with this letter for submittal with SSDP 2016-00414 are the following documents: 1) Certificates of Water and Sewer Availability; 2) Preliminary Tree Preservation Plans, and 3) Preliminary Illumination Technical Memorandum and Preliminary Plans; 4) an updated title report for this property.

King County has no objection to the City's request for a Tree preservation plan and the Water and Sewer certificates and is providing these documents with this submission. With today's submission, King County has met all of the requirements specified in SMC 20.04.040 and has paid all of the fees for a complete application. See RCW 36.70B.060 ("a project permit application is complete...when it meets the procedural submission requirements of the local

**Exhibit 21**  
**SSDP2016-00414**  
**000998**

government and is sufficient for continued processing even though additional information may be required or project modifications may be undertaken subsequently.”)

King County objects to all other items listed as “Required Information” in the November 15, 2016 letter. In requesting additional information relating to property/ownership, you appear to be relying on City of Sammamish Ordinance No. 02016-415. You stated that City staff was not clear how to interpret the property/ownership documents submitted with the SSDP permit application on October 19, 2016. Specifically, you stated that “it was not clear which documents applied to which property included in the project, and what property interests the Applicant is asserting for each property included in the project.” You listed the following property/ownership related documents as required information for this application to be deemed complete: 1) a color coded map showing individual land ownership and control, easements, encroaching structures, and rights of way, 2) a table showing property ownership, address, parcel identification number; 3) “Appropriate ownership/control documents such as easements, deeds and rights-of-ways”; 4) Identification of and plan for encroachments.

As of October 19, 2016, the City had in its possession sufficient proof of ownership and other requirements to satisfy the legal requirements set forth in the City’s code. The City has exceeded its authority in determining that the property related documents listed as “Required Information” in the November 15, 2016 letter are necessary for a determination of completeness. This request for additional property related serve no legitimate municipal purpose and interfere with King County’s right to construct a parking lot.

King County’s response to these requests is as follows:

1. Proof of Ownership/Property Interests:

King County provided the City with sufficient proof of ownership of the Inglewood Parking Lot property at the time of permit intake. The Inglewood Parking Lot will be constructed on the following parcels: 357530-0260, 357530-0340, 357530-0365, 357530-0370 and 357530-0460. *See attached Declaration of Robert Nunnenkamp<sup>1</sup>* at 8. King County Parks is listed as the owner of record by the Assessor for each of these parcels. *Id.* King County owns these parcels in fee. *Id.* In connection with its recent permit submittal on October 19, 2016, King County provided the City with a title report further illustrating its fee ownership of the Inglewood Parking Lot parcels and is now providing a more recent title report with this submission. *Id.*

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<sup>1</sup> As described herein, King County has met the legal requirements in SMC 20.04.040 to establish proof of ownership and the City should determine that this application is complete. Nevertheless, in an effort to assist the City in understanding the property and ownership records, we have prepared the attached Declaration of Robert Nunnenkamp. In this declaration, King County Parks Property Agent Robert Nunnenkamp summarizes the property/ownership information for the parking lot and the ELST Corridor and provides additional copies of the 1998 King County Deed, the Summary Judgment Order and other documents previously supplied to the City. *See* Nunnenkamp Decl. at p.2. In addition, the Nunnenkamp Declaration provides copies of all ~~some~~ deeds and establish the Corridor in Segment 2B.

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A portion of the parking lot will be constructed on parcel number 2925069007. *Id.* That parcel is a portion of the ELST Corridor that was purchased by King County in 1998. We provided a copy of King County Recording No. 9809181252, which is the Quitclaim Deed that covers the Corridor (“1998 King County Deed”). *Id.* at ex. 1. The deed documents a sale of the Corridor on September 18, 1998 from The Land Conservancy to King County. Although the 1998 King County Deed was sufficient by itself to establish King County’s property rights, at the time of intake King County also provided a copy of the Order on Cross-Motions for Summary Judgment (“Summary Judgment Order”) and the Judgment Quieting Title to King County (“Judgment”), which were entered by Judge Pechman in *Hornish v. King County*, No. 2:15-cv-00284-MJP. *Id.* at ex. 3.

In the face of a challenge by several adjacent property owners including your own councilmember, Thomas E. Hornish, the federal court upheld the validity of King County’s property rights and quieted title in King County to the Corridor. Of note, the Summary Judgment Order holds that: (1) King County holds all property rights previously held by BNSF, (2) King County owns the portion of the Corridor covered by the Hilchkanum Deed in fee, (3) Where King County does not own in fee, it holds a “railroad easement” that “entitle[s] it to the exclusive use and possession of the area on, above and below the surface of the Corridor for railroad purposes and incidental uses permitted by Washington law, including use as a recreational trail,” (4) Subject to prior property transactions by BNSF, the prescriptive easement/adverse possession areas of the Corridor are 100 feet wide, and (5) Pursuant to RCW 7.28.070, King County owns the property rights described in the 1998 King County Deed. *Hornish v. King County*, No. 2:15-cv-00284-MJP. *Id.*

The related Judgment recognizes that the 1998 King County Deed establishes the boundaries of the Corridor. It holds that King County owns the portions of the Corridor covered by the Hilchkanum Deed (as described in the Judgment) in fee. *Id.* at ex. 4. Finally, it holds that King County is entitled to exercise its broad easement rights in the described prescriptive easement/adverse possession areas of the Corridor consistent with the Summary Judgment Order. *Id.*

While the City of Sammamish has authority to request some proof of ownership, it is the role of the courts, not the City of Sammamish, to determine property rights. The courts, most recently Judge Pechman, have repeatedly ruled in King County’s favor and have unequivocally stated that King County has authority to construct the permanent trail. In addition, ownership records for the Corridor are reflected in property records maintained by the King County Auditor and tax records maintained by the King County Assessor, which list King County as the parcel owner. *See Declaration of Robert Nunnenkamp* at ¶4. The City of Sammamish Department of Community Development permitting staff have no authority to adjudicate property rights. The relevant property rights for the project are established unequivocally based on court rulings and tax records that recognize King County as the property owner.

In sum, the City of Sammamish has been provided with all relevant ownership documents for this development proposal. Because the previously supplied documents establish King County's property rights and its right to construct a trail, no further documentation is necessary or appropriate.<sup>2</sup>

## 2. Map of the Inglewood Parking Lot/ELST

Although not legally required, as a courtesy to the City, we have prepared a map of the parcels that comprise the Inglewood Parking Lot property. *Id* at ex. 25.

## 3. Table

It appears that the City may be requesting information on adjacent properties. If so, this information is outside the scope of the City's authority and unnecessary for review of King County's shoreline permit application. King County's development proposal for the parking lot is limited to property owned by King County. The status of properties adjacent to the parking lot is irrelevant.<sup>3</sup>

## 4. Encroachments

In your November 15, letter, you requested "identification of and plan for encroachments" and you raised questions of "[e]ncroaching structures and how they may be impacted" by trail construction. This information is not legally required and the City has no lawful basis to cite this as a basis for deeming the application incomplete. The City has no role in adjudicating the status of third-party structures within King County's Corridor, or reviewing King County's "plan for encroachments." This request falls outside the scope of the City's code, including even the broad requirements of Ordinance No. 2016-415. King County will address each encroachment as necessary, consistent with the needs of the County and in compliance with the law.

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<sup>2</sup> Under Judge Pechman's Summary Judgment Order, there is no doubt that King County has full rights to construct the permanent trail in fee, as well as easement areas. The Corridor is railbanked under the federal Trails Act and under the exclusive jurisdiction of the Surface Transportation Board, which has authorized the trail through issuance of a NITU. *See* Declaration of Nunnenkamp. With King County's "right to develop the site" well-established in the easement and fee areas, the "consent of all owners of the affected property" serves no legitimate purpose. To the contrary, granting an effective "veto right" to landowners adjacent to the Corridor by requiring their consent would violate Congress's determination to authorize trails in railbanked Corridors and subject the city to substantial liability under RCW 64.40. *See generally Friends of the E. Lake Sammamish Trail v. City of Sammamish*, 361 F. Supp. 2d 1260, 1273 (W.D. Wash. 2005) (finding federal preemption of City of Sammamish's efforts to "frustrate development of a trail on the railbanked right of way.") (attached to Nunnenkamp Decl. as exhibit 7).

<sup>3</sup> It is worth pointing out that Judge Pechman found that adjacent property owners "lack[ed] standing under the centerline presumption doctrine to challenge the County's property rights," which means that they have no identifiable property interest in the Corridor. *See* Nunnenkamp Decl. ex. 3.



5. Conclusion

The City's code provides guidance on when and under what circumstances a permit application should be deemed complete. SMC 20.05.040(1) provides that a permit application is complete when "it meets the procedural submission requirements of the department and is sufficient for continued processing even though additional information may be required or project modifications may be undertaken subsequently." SMC 20.05.040(1). King County has met these requirements and has filed a timely and complete application with the City. This application should be deemed complete as of today's date, November 30, 2016 - the date of submittal of the required material, in accordance with SMC 20.05.040(1).

The City's unfounded determination of incompleteness will result in significant delay damages to King County and will interfere with King County's ability to construct this parking lot to serve this important regional trail. The parking lot has been designed to comply with the regulations currently in effect. King County's consultants have designed this facility to meet these requirements and King County has spent significant public funds on the design to date. Earlier this year, King County learned that the City was intending to adopt new surface water regulations in December of 2016. As a result, King County completed the design work and met the other application requirements to ensure that this project could be vested to the current surface water regulations. King County project staff contacted City staff in early September to request a pre-application date and begin the process of submitting the permit applications. After a variety of delays, the ELST project team was ultimately able to submit the permit applications for the SSDP and grading permit on October 19, 2016.

If the City continues to insist that King County's permit application is incomplete, and thereby denies King County the ability to vest its development rights, King County will suffer significant damages. This includes the cost of redesigning the parking lot, potential loss of funding sources, and the interference with the public's use enjoyment of this important amenity for the ESLT for months or even years into the future. Since King County has now provided all of the documents required by the City code, we respectfully request that the City deem this application complete as of November 30, 2016.

Sincerely,



Kevin Brown  
Director

Enclosures

**Exhibit 21**  
**SSDP2016-00414**  
**001002**



This certificate provides the Seattle King County Department of Public Health and the Department of Development and Environmental Services with information necessary to evaluate development proposals.

## King County Certificate of Sewer Availability

Do not write in this box

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number \_\_\_\_\_ name \_\_\_\_\_

- Building Permit       Preliminary Plat or PUD  
 Short Subdivision       Rezone or other \_\_\_\_\_

Applicant's name: Parametrix for King County

Proposed use: Public Institutional Restroom - 3/4" meter = 1 ERU

Location: Tax Parcel 3575300260, E Lake Sammamish Pkwy NE + Inglewood Hill Rd  
Inglewood Hill Parking Lot for East Lake Sammamish Trail  
 (attach map and legal description if necessary)

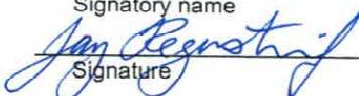
### Sewer agency information:

1.  a. Sewer service will be provided by side sewer connection only to an existing 3" size sewer 15 feet from the site and the sewer system has the capacity to serve the proposed use.  
 OR  
 b. Sewer service will require an improvement to the sewer system of:
  - (1) \_\_\_\_\_ feet of sewer trunk or lateral to reach the site; and/or
  - (2) The construction of a collection system on the site; and/or
  - (3) Other (describe) \_\_\_\_\_
  
2.  a. The sewer system improvement is in conformance with a County approved sewer comprehensive plan.  
 OR  
 b. The sewer system improvement will require a sewer comprehensive plan amendment.
  
3.  a. The proposed project is within the corporate limits of the district or has been granted Boundary Review Board approval for extension of service outside the district or city.  
 OR  
 b. Annexation or Boundary Review Board (BRB) approval will be necessary to provide service.
  
4. Service is subject to the following:
  - a. Connection charge: General Facility Charge + Side Sewer Permit
  - b. Easement(s): \_\_\_\_\_
  - c. Other: District standard Grinder-Pump System + associated Maintenance Agreement

\* Comments: This Certificate is subject to the attached Conditions labeled CERTAT05, NON-DE, and is not valid without such attachment. The District may require a Developer Extension Agreement if connection effort is greater than normal connection fees.

I certify that the above sewer agency information is true. This certification shall be valid for one year from date of signature.

Sammamish Plateau Water & Sewer District  
 \_\_\_\_\_  
 Agency name  
 Planning Engineer  
 \_\_\_\_\_  
 Title

Jay Regenstreif, P.E.  
 \_\_\_\_\_  
 Signatory name  
  
 \_\_\_\_\_  
 Signature

11/22/2016  
 \_\_\_\_\_  
 Date

**Exhibit 21**  
**SSDP2016-00414**  
**001003**



**ATTACHMENT TO**  
**KING COUNTY CERTIFICATE OF AVAILABILITY**  
**SAMMAMISH PLATEAU WATER AND SEWER DISTRICT**

The following terms and conditions apply to the attached King County Certificate of Availability.

1. This Certificate of Availability is valid only for the real property referenced herein for the sole purpose of submission to King County Department of Development and Environmental Services, Seattle/King County Department of Public Health, or the Cities of Sammamish or Issaquah. This Certificate of Availability is between the District and the applicant only, and no third person or party shall have any rights hereunder whether by agency or as a third-party beneficiary or otherwise.

2. The District makes no representations, express or implied, that the owners of the real property which is the subject of this Certificate of Availability will be able to obtain the necessary permits, approvals, and authorizations from King County, City of Sammamish, City of Issaquah or any other governmental agency necessary before the owners of the real property can utilize the utility service which is the subject of this Certificate.

3. In the event the District and/or the party requesting the Certificate of Availability must extend the District's water and/or sewer system to provide utility service to the real property which is the subject of the Certificate of Availability, the District and/or the property owner may be required to obtain from King County, City of Sammamish, City of Issaquah or other governmental agencies various permits, approvals and authorizations. District makes no representations, express or implied, that the District and/or the owner of the real property which is the subject of the Certificate of Availability may be able to obtain all permits, approvals, and authorizations or to obtain such within any time or date certain to be able to utilize the utility service which is the subject of this Certificate. In addition, other governmental agencies may establish requirements, as a condition of granting any such permits, approvals, or authorizations relating to the Certificate of Availability that may make the provision of utility services impractical or impossible to the property which is the subject of the Certificate.

4. As of the date of the issuance of this Certificate, the District has water and/or sewer availability to provide such utility service to the property which is the subject of this Certificate, and the utility systems exist or may be extended to provide service to such property. However, the issuance of this Certificate creates no contractual relationship between the District and the applicant, and the issuance of this Certificate may not be relied upon and does not constitute the District's guarantee that water and/or sewer will be available at the time the applicant may apply to the District for such service.



King County

**DDIES**

DEPARTMENT OF DEVELOPMENT AND ENVIRONMENTAL SERVICES

900 Oakesdale Avenue Southwest  
Renton, Wa 98055-1219

This certificate provides the Seattle - King County Department of Public Health and the Department of Development and Environmental Services with information necessary to evaluate development proposals.

### King County Certificate of Water Availability

Do not write in this box	
_____	_____
number	name

- Building Permit
- Preliminary Plat or PUD
- Short Subdivision
- Rezone or other \_\_\_\_\_

Applicant's name: Parametrix for King County

Proposed use: Public Institutional Restroom - 3/4" meter ≡ 1 ERU

Location: Tax Parcel 3575300260, E Lake Sammamish Pkwy NE + Inglewood Hill Rd.  
Inglewood Hill Parking Lot For East Lake Sammamish Trail  
(attach map and legal description if necessary)

#### Water utility information:

1.  a. Water will be provided by service connection only to an existing 8" (size) water main that is 60 feet from the site.  
OR  
 b. Water service will require an improvement to the water system of:
  - (1) \_\_\_\_\_ feet of water main to reach the site; and/or
  - (2) The construction of a distribution system on the site; and/or
  - (3) Other (describe) \_\_\_\_\_
2.  a. The water system has a current County-approved water comprehensive plan and franchise.  
OR  
 b. The water system does not have a current County-approved water comprehensive plan or franchise and will require a new or amended water comprehensive plan or franchise. (This may cause a delay in issuance of a permit or approval).
3.  a. The proposed project is within the corporate limits of the utility, or the utility has been granted Boundary Review Board approval for service area annexation, or the project is within the County-approved service area of the utility.  
OR  
 b. Boundary Review Board approval of an annexation will be necessary to provide service.
4.  a. Water is or will be available at the rate of flow and duration indicated below at no less than 20 psi measured at the nearest fire hydrant \_\_\_\_\_ feet from the building/property (or as marked on the attached map):
 

<b>Rate of flow at Peak Demand</b>	<b>Duration</b>
<input type="checkbox"/> less than 500 gpm (approx. _____ gpm)	<input type="checkbox"/> less than 1 hour
<input type="checkbox"/> 500 to 999 gpm	<input type="checkbox"/> 1 hour to 2 hours
<input type="checkbox"/> 1000 gpm or more	<input checked="" type="checkbox"/> 2 hours or more
<input type="checkbox"/> flow test of _____ gpm	<input type="checkbox"/> other _____
<input checked="" type="checkbox"/> calculation of <u>1200</u> gpm	

(Note: Commercial building permits which includes multifamily structures require flow test or calculation.)

 OR  
 b. Water system is not capable of providing fire flow.
5.  a. Water system has certificates of water right or water right claims sufficient to provide service.  
OR  
 b. Water system does not currently have necessary water rights or water right claims.

\* Comments/conditions: Meter Drop, General Facility + Regional Capital Facility Charges owe for service.

I certify that the above water utility information is true. This certificate shall be valid for one year from date of signature.

Sammamish Plateau Water & Sewer District  
 Agency name  
 Planning Engineer  
 Title  
 Nov. 24, 1999

Jay Regenstreif, P.E.  
 Signatory name  
Jay Regenstreif  
 Signature

11/22/2016  
 Date

**Exhibit 21**  
**SSDP2016-00414**  
**001005**



ATTACHMENT TO  
KING COUNTY CERTIFICATE OF AVAILABILITY  
SAMMAMISH PLATEAU WATER AND SEWER DISTRICT

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1. This Certificate of Availability is valid only for the real property referenced herein for the sole purpose of submission to King County Department of Development and Environmental Services, Seattle/King County Department of Public Health, or the Cities of Sammamish or Issaquah. This Certificate of Availability is between the District and the applicant only, and no third person or party shall have any rights hereunder whether by agency or as a third-party beneficiary or otherwise.

2. The District makes no representations, express or implied, that the owners of the real property which is the subject of this Certificate of Availability will be able to obtain the necessary permits, approvals, and authorizations from King County, City of Sammamish, City of Issaquah or any other governmental agency necessary before the owners of the real property can utilize the utility service which is the subject of this Certificate.

3. In the event the District and/or the party requesting the Certificate of Availability must extend the District's water and/or sewer system to provide utility service to the real property which is the subject of the Certificate of Availability, the District and/or the property owner may be required to obtain from King County, City of Sammamish, City of Issaquah or other governmental agencies various permits, approvals and authorizations. District makes no representations, express or implied, that the District and/or the owner of the real property which is the subject of the Certificate of Availability may be able to obtain all permits, approvals, and authorizations or to obtain such within any time or date certain to be able to utilize the utility service which is the subject of this Certificate. In addition, other governmental agencies may establish requirements, as a condition of granting any such permits, approvals, or authorizations relating to the Certificate of Availability that may make the provision of utility services impractical or impossible to the property which is the subject of the Certificate.

4. As of the date of the issuance of this Certificate, the District has water and/or sewer availability to provide such utility service to the property which is the subject of this Certificate, and the utility systems exist or may be extended to provide service to such property. However, the issuance of this Certificate creates no contractual relationship between the District and the applicant, and the issuance of this Certificate may not be relied upon and does not constitute the District's guarantee that water and/or sewer will be available at the time the applicant may apply to the District for such service.





## TECHNICAL MEMORANDUM

DATE: November 18, 2016  
TO: Phoebe Johannessen  
FROM: Marc Kendall  
SUBJECT: Preliminary Illumination Technical Memo  
PROJECT NUMBER: 554-1521-075  
PROJECT NAME: East Lake Sammamish Trail - Inglewood Hill Parking Lot

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### PROJECT SUMMARY

#### Project Description

As part of the East Lake Sammamish Trail project, lighting is required at the Inglewood Hill Parking Lot along East Lake Sammamish Parkway SE between NE 16<sup>th</sup> St and NE Inglewood Hill Rd. The lighting requirement stems from City of Sammamish Public Works Standards Interim section PWS.15.330, which requires all developments requiring frontage improvements to install street lights.

The East Lake Sammamish Trail project is being funded by King County.

#### Existing Illumination

There is no existing lighting at the parking lot, trail or adjacent East Lake Sammamish Parkway SE.

The area is primarily a residential area Lighting Zone with low ambient lighting.

The site slopes down gradually from East Lake Sammamish Parkway SE through the parking lot and then there is a fairly steep slope down towards waterfront residences and the shoreline of Lake Sammamish.

The main source of pedestrians is the East Lake Sammamish Trail.

#### Proposed Illumination Upgrades

Illumination is proposed in order to provide for safety of traffic and pedestrian circulation in the parking lot and sidewalk through the parking area. Since the neighborhood is residential with low existing ambient lighting levels, up-light and light trespass are primary concerns and should be minimized.

Per City of Sammamish Public Works Standards Interim, Section PWS.15.340, pedestrian scale light poles shall be 16 feet high, with acorn style fixtures. Per City of Sammamish Municipal Code Section 21A.30.230, parking lot lighting fixtures shall be partially shielded to limit up-light and shall be installed to cause minimal or no light trespass onto adjacent properties. Acorn style fixtures are not ideal in this application because their design makes it difficult to limit up-light and light trespass. Because of these limitations, an alternative light is proposed.

Since the majority of lighting within the City is installed and maintained by Puget Sound Energy (PSE), an alternative fixture was selected from the PSE standard fixtures list. The Architectural Area Lighting (AAL) Providence fixture was selected because it is typically used in similar applications as the acorn, has no up-light, and has minimal light trespass. A second alternative, the AAL Largent fixture was also checked as a second alternative option.

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**001008**



## LIGHTING DESIGN PARAMETERS

### Design Standards

The design for this project was based on the following documents in order of precedence:

- City of Sammamish Public Works Standards Interim (2000)
- City of Sammamish Municipal Code
- City of Sammamish Public Works Standards 2016 – Draft
- IES Lighting Handbook (IESNA RP-8-14)
- WSDOT Design Manual, Chapter 1040 (July 2014)

### Design Parameters

The design areas included in the design are limited to the parking lot entrances and access to East Lake Sammamish Trail. After dark pedestrian volumes are anticipated to be low, which roughly equates to 0-10 peak hour after dark pedestrians per hour (IES Chapter 2.2).

The parking lot is considered a minor parking lot because it is anticipated that there will be a nighttime peak hour usage of 50 or fewer vehicles (WSDOT DM 1040.05(16)).

East Lake Sammamish Parkway SE is a minor arterial (PWS.15.050).

### Design Areas

There are five illumination design areas within the project area, which are the two parking lot entrances (WSDOT DM Ex 1040-17), the sidewalk that goes through the parking lot area, the plaza area and the ramp that connects to the East Lake Sammamish Trail.

### Illumination Standards

Lighting requirements for the two parking lot entrance design areas, the sidewalk area and the ramp area include 0.8 fc horizontal average illuminance and 4:1 or better uniformity (WSDOT DM Ex 1040-25). The minimum weak point light shall not be less than 0.2 fc (PWS.15.340). Lighting shall not exceed 5.0 lumens per square foot (SMC 21A.30.220).

The plaza area does not have specific lighting requirement. To remain consistent with other design areas, a 0.8 horizontal average illuminance is recommended for the plaza area.

All lighting shall be designed to use metal halide or LED light sources and light trespass and up-light shall be minimized (SMC 21A.30.220).

## LIGHTING ANALYSIS

### Software

Lighting analysis was completed using AGi32 version 17.2 software. The direct only method of calculation was used within the analysis area. Grids were spaced at 5 x 5 feet.

### Assumptions

Several assumptions were made relating to the lighting analysis.

- No light from businesses, homes or other sources outside of existing and proposed roadway lighting was included in the modeling.

- The LED lamp lumen depreciation factor was modeled at 0.90.
- The luminaire dirt depreciation factor was modeled at 0.85, to approximate a seven year cleaning/maintenance schedule in a clean environment with no nearby smoke or dust generating activities.

### Fixture(s)

Per Interim Sammamish Public Works Standards, the luminaire should be a King Luminaire K118 Washington acorn style fixture (PWS.15.340). Due to up-light and light trespass issues associated with acorn fixtures it is recommended that an alternative fixture be used.

The Architectural Area Lighting Providence fixture was selected as an appropriate alternative because it is typically used in similar applications as the acorn, has no up-light, and has minimal light trespass.

A second alternative, the AAL Largent was also checked at the same spacing and mounting height if the client should decide against the Providence.

Per current standards, light poles will round tapered fiberglass, and be 16 feet high (PWS.15.340). Although draft 2016 standards have yet to formally be adopted, they specify concrete poles and do not have a pole height standard. To remain consistent with PSE, it is recommended that light poles be Stresscrete Washington series concrete poles with a 15 foot height.

In addition to decorative fixtures, Kliksystems LEDpod 50 gripping rail lights are recommended at 8 foot spacing to light the ramp between the parking lot plaza and the East Lake Sammamish Trail.

It is recommended that the color temperature of new luminaires be 3000K maximum.

### Illumination Summary

The illumination summary has been completed as part of the design and the results are summarized in the table below. Lighting for the design areas is approximately 3.0 lumens per square foot (38841 lumens/12868 sf).

Calculation Summary							
Label	CalcType	Units	Avg	Max	Min	Avg/Min	Max/Min
Parking Entrance - North	Illuminance	Fc	1.15	2.35	0.78	1.47	3.01
Parking Entrance - South	Illuminance	Fc	1.07	1.60	0.57	1.88	2.81
Plaza	Illuminance	Fc	1.01	2.79	0.26	3.88	10.73
Ramp - Isolated	Illuminance	Fc	0.80	2.08	0.38	2.11	5.47
Sidewalk	Illuminance	Fc	0.89	2.72	0.28	3.18	9.71

These results meet the standards outlined above for average and uniformity (Avg/Min).

### Attachments

- AGI32 – Report
- Preliminary Plan Sheet IL1
- Product Sheets for Providence and Largent Fixtures
- Conceptual Renderings (2) of the parking lot illumination





Excellence in Illumination Engineering Software  
since 1984



sample banner copyright 2013 Lighting Analysts, Inc.

## User and Job File Information

### User Information

Marc Kendall, PE  
Parametrix

Voice Number : 253-604-6749  
Fax Number :  
Email Address : mkendall@parametrix.com

### Job File Information

Filename : Preliminary Illum - Rev B.AGI  
Location : U:\PSO\Projects\Clients\1521-KingCo\554-1521-075-ELST\99Svcs\CADD\Phase  
Created By : Marc Kendall, PE  
Created Date : 11/10/2016 7:52:25 AM  
Created Version : 17.2.12  
Modified By : Marc Kendall, PE  
Modified Date : 11/15/2016 9:22:57 AM  
Modified Version : 17.2.12  
Total Time (Hrs) : 26.15  
Description : Inglewood Analysis - Providence Fixture  
Information :  
11/15/2016 8:56:56 AM - Marc Kendall, PE :

**Exhibit 21**  
**SSDP2016-00414**  
**001011**





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## Luminaire Definition(s)

### PROL-T2-56LED-3K-700

PROL-T2-56LED-3K-700MA

Filename	PROL-T2-56LED-3K-700.ies
Lumens Per Lamp	N.A.
Number of Lamps	1
Total Lamp Lumens	N.A.
Arrangement Lamp Lumens	N.A.
Arrangement Luminaire Lumens	6556
Luminaire Lumens	6556
Luminaire Efficiency (%)	N.A.
Lamp Lumen Depreciation (LLD)	0.900
Luminaire Dirt Depreciation (LDD)	0.850
Total Light Loss Factor	0.765
Luminaire Watts	132.45
Arrangement Watts	132.45
Arrangement	SINGLE
Arm Length	0
Offset	0
Road Classification	Type III, Short, N.A. (deprecated)
Upward Waste Light Ratio	0.00

Luminaire Classification System (LCS)	Lumens	% Lamp	% Luminaire
LCS-FL	188.4	N.A.	2.9
LCS-FM	2561.3	N.A.	39.1
LCS-FH	2089.3	N.A.	31.9
LCS-FVH	55.2	N.A.	0.8
LCS-BL	131.2	N.A.	2.0
LCS-BM	858.7	N.A.	13.1
LCS-BH	640.4	N.A.	9.8
LCS-BVH	31.8	N.A.	0.5
LCS-UL	0.0	N.A.	0.0
LCS-UH	0.0	N.A.	0.0
Total	6556.3	N.A.	100.0

Indoor Classification	B2-U0-G2
LER	Direct 49

### PROL-T4-56LED-3K-450

PROL-T4-56LED-3K-450

Filename	PROL-T4-56LED-3K-450.ies
Lumens Per Lamp	N.A.
Number of Lamps	1
Total Lamp Lumens	N.A.
Arrangement Lamp Lumens	N.A.
Arrangement Luminaire Lumens	4077
Luminaire Lumens	4077
Luminaire Efficiency (%)	N.A.
Lamp Lumen Depreciation (LLD)	0.900

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## Luminaire Definition(s) - Cont.

Luminaire Dirt Depreciation (LDD)	0.850
Total Light Loss Factor	0.765
Luminaire Watts	85
Arrangement Watts	85
Arrangement	SINGLE
Arm Length	0
Offset	0
Road Classification	Type IV, Very Short, N.A. (deprecated)
Upward Waste Light Ratio	0.00

Luminaire Classification System (LCS)	Lumens	% Lamp	% Luminaire
LCS-FL	124.3	N.A.	3.0
LCS-FM	1913.0	N.A.	46.9
LCS-FH	1604.0	N.A.	39.3
LCS-FVH	44.6	N.A.	1.1
LCS-BL	71.2	N.A.	1.7
LCS-BM	213.0	N.A.	5.2
LCS-BH	94.1	N.A.	2.3
LCS-BVH	12.7	N.A.	0.3
LCS-UL	0.0	N.A.	0.0
LCS-UH	0.0	N.A.	0.0
Total	4076.9	N.A.	100.0
BUG Rating	B0-U0-G1		
Indoor Classification	Direct		
LER	48		

### PROL-T3-56LED-3K-450

PROL-T3-56LED-3K-450

Filename	PROL-T3-56LED-3K-450.ies
Lumens Per Lamp	N.A.
Number of Lamps	1
Total Lamp Lumens	N.A.
Arrangement Lamp Lumens	N.A.
Arrangement Luminaire Lumens	4218
Luminaire Lumens	4218
Luminaire Efficiency (%)	N.A.
Lamp Lumen Depreciation (LLD)	0.900
Luminaire Dirt Depreciation (LDD)	0.850
Total Light Loss Factor	0.765
Luminaire Watts	85
Arrangement Watts	85
Arrangement	SINGLE
Arm Length	0
Offset	0
Road Classification	Type III, Short, N.A. (deprecated)
Upward Waste Light Ratio	0.00

Luminaire Classification System (LCS)	Lumens	% Lamp	% Luminaire
LCS-FL	108.8	N.A.	2.6
LCS-FM	1712.3	N.A.	40.6

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### Luminaire Definition(s) - Cont.

LCS-FH	1431.5	N.A.	33.9
LCS-FVH	38.7	N.A.	0.9
LCS-BL	76.7	N.A.	1.8
LCS-BM	488.4	N.A.	11.6
LCS-BH	344.2	N.A.	8.2
LCS-BVH	17.7	N.A.	0.4
LCS-UL	0.0	N.A.	0.0
LCS-UH	0.0	N.A.	0.0
Total	4218.3	N.A.	100.0
BUG Rating	B1-U0-G1		
Indoor Classification	Direct		
LER	50		

### LEDPOD50-2W-500-3000K-Asym

PCLens-WhiteAsymRef-2W-LED-500mA-LEDPOD-3000K-direct

Filename	LPOD50-PCLens-direct-WhiteAsymRef-2W-LED-500mA-LEDP
Lumens Per Lamp	145
Number of Lamps	1
Total Lamp Lumens	145
Arrangement Lamp Lumens	145
Arrangement Luminaire Lumens	107
Luminaire Lumens	107
Luminaire Efficiency (%)	74
Lamp Lumen Depreciation (LLD)	0.900
Luminaire Dirt Depreciation (LDD)	0.850
Total Light Loss Factor	0.765
Luminaire Watts	2
Arrangement Watts	2
Arrangement	SINGLE
Arm Length	0
Offset	0
Road Classification	Type III, Very Short, Cutoff (deprecated)
Indoor Classification	Direct
LER	53

**Exhibit 21**  
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**001014**





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## Calculation Summary

### Parking Entrance - North

Project: Project\_1  
Polygon  
Coordinates in Feet

Point Spacing L-R	3
Point Spacing T-B	3
Grid Orient	0
Grid Tilt	0
Meter Type	Horizontal

Illuminance (Fc)	
Average	1.15
Maximum	2.35
Minimum	0.78
Avg/Min	1.47
Max/Min	3.01

### Parking Entrance - South

Project: Project\_1  
Polygon  
Coordinates in Feet

Point Spacing L-R	3
Point Spacing T-B	3
Grid Orient	0
Grid Tilt	0
Meter Type	Horizontal

Illuminance (Fc)	
Average	1.07
Maximum	1.60
Minimum	0.57
Avg/Min	1.88
Max/Min	2.81

### Parking Lot

Project: Project\_1  
Polygon  
Coordinates in Feet

Point Spacing L-R	3
Point Spacing T-B	3
Grid Orient	0
Grid Tilt	0
Meter Type	Horizontal

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## Calculation Summary - Cont.

Illuminance (Fc)	
Average	0.90
Maximum	2.74
Minimum	0.06
Avg/Min	15.00
Max/Min	45.67

### Plaza

Project: Project\_1  
Polygon  
Coordinates in Feet

Point Spacing L-R	3
Point Spacing T-B	3
Grid Orient	0
Grid Tilt	0
Meter Type	Horizontal

Illuminance (Fc)	
Average	1.01
Maximum	2.79
Minimum	0.26
Avg/Min	3.88
Max/Min	10.73

### Ramp - Isolated

Project: Project\_1  
Polygon  
Coordinates in Feet

Point Spacing L-R	3
Point Spacing T-B	3
Grid Orient	0
Grid Tilt	0
Meter Type	Horizontal

Illuminance (Fc)	
Average	0.80
Maximum	2.08
Minimum	0.38
Avg/Min	2.11
Max/Min	5.47

### Sidewalk

Project: Project\_1  
Polygon

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## Calculation Summary - Cont.

### Coordinates in Feet

Point Spacing L-R	3
Point Spacing T-B	3
Grid Orient	0
Grid Tilt	0
Meter Type	Horizontal

### Illuminance (Fc)

Average	0.89
Maximum	2.72
Minimum	0.28
Avg/Min	3.18
Max/Min	9.71



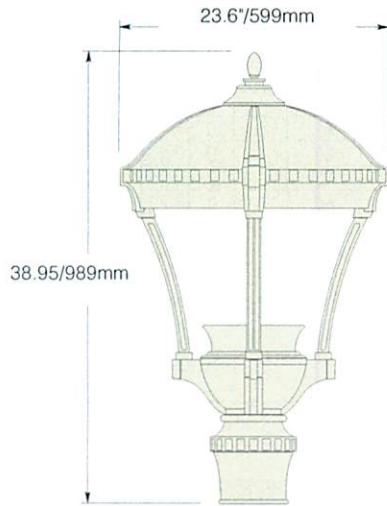


FEATURES

- DLC Qualified
- Reliable, uniform, glare free illumination
- Types II, III, IV, V and custom distributions
- 3000K, 4000K, 5000K CCT
- 0-10V dimming ready
- Integral surge suppression
- LifeShield™ thermal protection
- 13 standard powder coat finishes
- Upgrade Kits



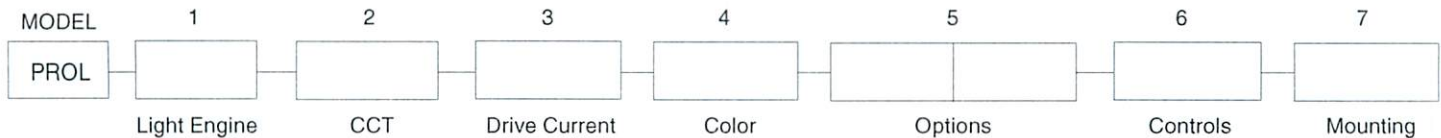
SPECIFICATIONS



- Diameter: 23.6" / 599 mm
- Height: 38.95" / 989 mm
- Weight: 47 lbs
- EPA: 1.33
- IP Rating: 65



ORDERING INFORMATION



1. LIGHT ENGINE

MicroCore Precision aimed optics

- T2-56LED
- T3-56LED
- T4-56LED
- T5-56LED
- TL-56LED
- TR-56LED

2. COLOR TEMPERATURE

- 3K
- 4K
- 5K

3. DRIVE CURRENT

- 700
- 450

4. COLOR

- WH Arctic White
- BL Black
- BLT Matte Black
- DB Dark Bronze
- DGN Dark Green
- TT Titanium
- WDB Weathered Bronze
- MDB Bronze Metallic
- VBU Verde Blue
- CRT Corten
- MAL Matte Aluminum
- MG Medium Grey
- AGN Antique Green
- LG Light Grey
- RAL Premium Color
- CUSTOM \* \* Contact Factory

5. OPTIONS

- SPK (Decorative spike)
- BPS (Struts painted brass)
- LDL (Lightly diffused lens.)
- CLR (Clear flat lens)
- HSS (House Side shield for Type 4)
- PFN (Finial painted brass)
- EPA-C (Egress-Contemporary)
- EPA-T (Egress-Traditional)
- PT4 (Post top fitter for a 4"/100mm O.D. pole)
- PT23 (Slips Over A 2 3/8"OD Tenon)
- PT3 (Slips Over A 3"OD Tenon)

6. CONTROL

- PCA-C (Rotatable photocell-Contemporary)
- PCA-T (Rotatable photocell-Traditional)

SCP (Sensor Control Programmable) pole accessory is available to provide occupancy detection for outdoor applications meeting California Title 24. For complete spec sheet and ordering information, visit [www.aal.net/products/sensor\\_control\\_programmable/](http://www.aal.net/products/sensor_control_programmable/)

7. MOUNTING

Standard configuration slips over a 5" DIA open top pole or may choose one.

Wall Mount Arm

- WMA55
- WMA56

Pole Mount Arm

- TRA55
- TRA56
- SLA1
- SLA1-2

Pier Mount

- PM1
- PM2
- PM3



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JOB \_\_\_\_\_  
 TYPE \_\_\_\_\_  
 NOTES \_\_\_\_\_

**Exhibit 21**  
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LUMINAIRE PERFORMANCE

Optical System	Secondary Lens or Shield	Distribution	Light Engine	Ordering Code												Drive Current	System Watts			
				3K (WW)			4K (NW)			5K (BW)										
				Delivered Lumens	Efficacy (Lm/W)	BUG Rating	Delivered Lumens	Efficacy (Lm/W)	BUG Rating	Delivered Lumens	Efficacy (Lm/W)	BUG Rating								
MicroCore	No Lens (Standard)	TYPE 2	T2-56LED	6556	50	2	0	2	8283	63	2	0	2	8860	67	2	0	2	700	132
		TYPE 3	T3-56LED	6591	50	2	0	2	8240	62	2	0	2	8907	67	2	0	2		
		TYPE 4	T4-56LED	6370	48	1	0	2	8048	61	1	0	2	8603	65	1	0	2		
		TYPE 5	T5-56LED	6620	50	3	0	1	8318	63	3	0	1	8945	63	3	0	1		
		45° Left	TL-56LED	6048	46	1	0	2	7163	54	1	0	2	7959	60	1	0	2		
		45° Right	TR-56LED	6048	46	1	0	2	7163	54	1	0	2	7959	60	1	0	2		
	HSS	TYPE 4	T3-56LED	5275	40	0	0	2	6316	48	0	0	2	6687	51	0	0	2	450	85
		TYPE 2	T2-56LED	4196	49	1	0	1	5273	62	2	0	2	5670	67	2	0	2		
	No Lens (Standard)	TYPE 3	T3-56LED	4218	50	1	0	1	5301	62	1	0	1	5700	67	1	0	2	450	85
		TYPE 4	T4-56LED	4077	48	0	0	1	5151	61	1	0	2	5506	65	1	0	2		
		TYPE 5	T5-56LED	4236	50	2	0	1	5324	63	3	0	1	5275	62	3	0	1		
		45° Left	TL-56LED	3871	46	1	0	1	4584	54	1	0	2	5094	60	1	0	2		
		45° Right	TR-56LED	3871	46	1	0	1	4584	54	1	0	2	5094	60	1	0	2		
		HSS	TYPE 4	T4-56LED	3376	40	0	0	2	4042	48	0	0	2	4280	50	0	0		

\* DesignLights Consortium® Qualified Product



ELECTRICAL CHARACTERISTICS

Optical System	Ordering Code	LED Drive mA	System Watts	Driver						Dimming								
				Line Voltage		Amps AC		Min. Power Factor	Max THD (%)	Operating Temp. Range	Dimming Range	Source current out of 0-10V purple wire			Absolute voltage range on 0-10V (+) purple wire			
				VAC	HZ	120	277					Min	Typical	Max	Min	Typical	Max	
MicroCore	56LED	700	700	132	120-277	50/60	1.1	0.5	≥ 9	20	-30°C TO +40°C	10% TO 100%	0 MA	-	2 MA	-2.0 V	-	+15 V
		450	450	85			0.7	0.3										

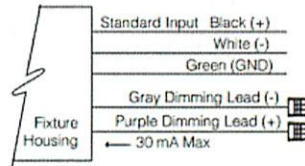
LED COLOR

Consult factory for Amber, Turtle Friendly, Gulf Coast and Observatory applications.

	Ordering Code		
	3K	4K	5K
CCT Average	3000K	4000K	5000K
CRI Minimum	≥ 80	≥ 70	≥ 70

WIRING LEADS

Luminaires not configured with wiHUBB or photo-control shall be provided with 0-10 purple and gray dimming leads.



TM-21 LIFETIME CALCULATION

Optical System	Ordering Code	Ambient Environment °C	Projected Lumen Maintenance (% vs. Khrs)					Reported L70
			15	25	50	TM-21* 60	100	
MicroCore	56LED	15	95	93	88	86	80	≥ 60
		25	93	91	97	85	79	
		40	93	91	87	85	78	



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 TYPE  
 NOTES

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**SPECIFICATIONS**

**HOUSING**

- Luminaire shall have discrete optical and gear compartments that do not share any physical housings.
- All housing components shall be die-cast aluminum, sealed with continuous silicone rubber gaskets.
- Standard configurations do not require a flat lens, optional lenses shall be tempered glass
- All internal and external hardware shall be stainless steel.
- Optical bezel finish shall match the luminaire housing.

**OPTICAL**

- Patent pending MicroCore™ LED modules shall independently aim each light emitting diode (LED) in both horizontal rotation and vertical tilt angle.
- LEDs shall be mounted to a metal printed circuit board assembly (PCBA) with a uniform conformal coating over the panel surface and electrical features.
- LED optics shall be clear injection molded PMMA acrylic.
- MicroCore™ PCBA and optic shall be sealed to a die-cast anodized aluminum heat sink with an injection molded silicone rubber gasket. IP66.
- Type 4 distribution with optional House Side Shield not available with clear or diffused glass lenses. Factory installed House Side Shield is optimized for Type 4 distribution and not recommended for use with Type 2 or 3 distribution and not available with type 5 distribution.

**ELECTRICAL**

- Luminaires shall have integral surge protection that shall be U.L. recognized and have a surge current rating of 10,000 Amps using the industry standard 8/20uSec wave and surge rating of 372J.
- Drivers shall be U.L. recognized with an inrush current maximum of <20.0 Amps maximum at 230VAC.
- Drivers shall not be compatible with current sourcing dimmers, consult factory for current list of known compatible dimming systems, approved dimmers include Lutron Diva AVTV, Lutron Nova NFTV and NTFTV.
- LifeShield™ shall be provided with all configurations for added protection in the event of abnormally excessive high ambient temperature conditions.

**CONTROLS**

- SCP shall have an integral surge protection device with a current rating of 10,000 Amps using the industry standard 8/20uSec wave and surge rating of 372J
- Sensor not intended for use with additional photo-control, wireless control or dimming systems.

**PHOTOCELL / EGRESS ADAPTERS**

- Adapter(s) shall slip over a 4"/100mm DIA. pole with the luminaire or arm slipping over the adapter to add a total of 4.5"/114mm to the overall height. Adapter(s) shall be prewired, independently rotatable 359°, and have a cast access cover with an integral lens and lanyard.
- Photocell adapter shall include an internal twist lock receptacle. Photocell by others.
- Egress adapter shall require an auxiliary 120 volt supply for operation of an integral MR16 lamp in the event of emergency. The lamp may be aimed and locked into position with an adjustment range of 15°-45°. Adapter shall have a socket that accepts miniature bi-pin MR16 lamps up to 50 watts, lamp by others.

**SERVICING**

- Luminaire shall have tool-less service access to the gear compartment. Driver and surge suppressor shall be mounted to a prewired tray with quick disconnects that may be removed from the gear compartment.

**ARM MOUNTING**

- Luminaire shall slip over mounting arm and secured with three stainless steel 5/16-18 set screws.

**FINISH**

- Luminaire finish shall consist of a five stage pretreatment regimen with a polymer primer sealer, oven dry off, and top coated with a thermoset super TGIC polyester powder coat finish.
- Luminaire finish shall meet the AAMA 605.2 performance specification which includes passing a 3000 hour salt spray test for corrosion resistance.

**CERTIFICATION**

- Luminaire shall be listed with ETL for outdoor, wet location use, UL1598, UL 8750 and Canadian CSA Std. C22.2 no.250.

**WARRANTY / TERMS AND CONDITIONS OF SALE**

Download: <http://www.hubbelling.com/resources/warranty/>

**LED lighting facts**  
A Program of the U.S. DOE

Light Output (Lumens)	8043
Watts	131.09
Lumens per Watt (Efficacy)	61
Color Accuracy Color Rendering Index (CRI)	74
Light Color Correlated Color Temperature (CCT)	4155 (Bright White)

Color spectrum diagram showing Warm White (2700K), Bright White (3000K), 4155K (Bright White), Daylight (4500K), and 6500K.

All results are according to IESNA LM-79-08, Approved Method for the Electrical and Photometric Testing of Solid-State Lighting. The U.S. Department of Energy (DOE) verifies product test data and results.

Visit [www.lightingfacts.com](http://www.lightingfacts.com) for the Label Reference Guide.

Registration Number: ZC04-11M19-000213  
Model Number: PRO-LA-50LED-04-001  
Type: Luminaire - Area/Recessed



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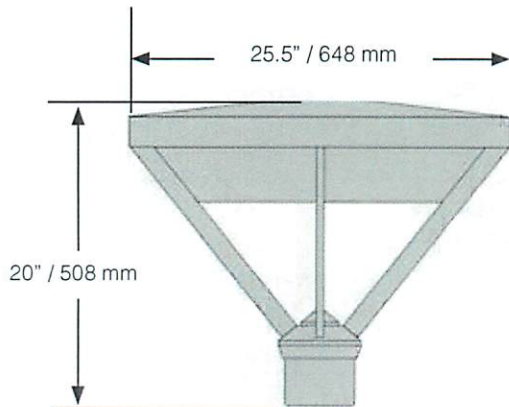
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**SSDP2016-00414**  
**001021**

## FEATURES

- DLC Qualified
- Reliable, uniform, glare free illumination
- Types II, III, IV, V and custom distributions
- 3000K, 4000K, 5000K CCT
- 0-10V dimming ready
- Integral surge suppression
- LifeShield™ thermal protection
- 13 standard powder coat finishes
- LED upgrade Kits also available



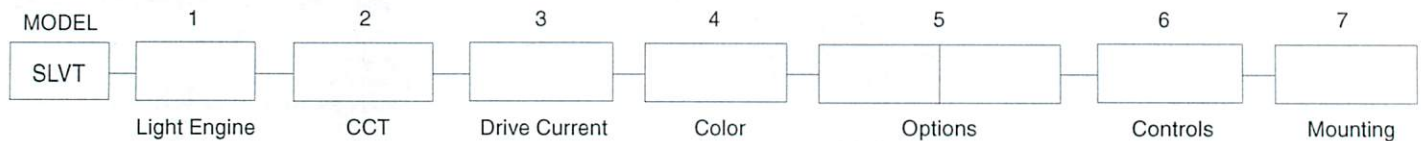
## SPECIFICATIONS



- Diameter: 25.5" / 648 mm
- Height: 20" / 508 mm
- Weight: 27 lbs
- EPA: 0.8v
- IP Rating: 66



## ORDERING INFORMATION



### 1. LIGHT ENGINE

*MicroCore Precision aimed optics*

- T2-56LED
- T3-56LED
- T4-56LED
- T5-56LED
- TL-56LED
- TR-56LED

### 2. COLOR TEMPERATURE

- 3K
- 4K
- 5K

### 3. DRIVE CURRENT

- 700
- 450

### 4. COLOR

- |                      |                            |
|----------------------|----------------------------|
| WH Arctic White      | VBU Verde Blue             |
| BL Black             | CRT Corten                 |
| BLT Matte Black      | MAL Matte Aluminum         |
| DB Dark Bronze       | MG Medium Grey             |
| DGN Dark Green       | AGN Antique Green          |
| TT Titanium          | LG Light Grey              |
| WDB Weathered Bronze | RAL Premium Color          |
| MDB Bronze Metallic  | CUSTOM * * Contact Factory |

### 5. OPTIONS

- CLR (Clear secondary lens)
- LDL (Frosted Secondary Lens)
- HSS (House Side shield for Type 4)
- EPA-C (Egress in-line adapter)
- PT23 (Slips Over A 2 3/8"OD Tenon)
- PT3 (Slips Over A 3"OD Tenon)

### 6. CONTROLS

PCA-C (Rotatable photocell-Contemporary)

SCP (Sensor Control Programmable) pole accessory is available to provide occupancy detection for outdoor applications meeting California Title 24. For complete spec sheet and ordering information, visit [www.aal.net/products/sensor\\_control\\_programmable/](http://www.aal.net/products/sensor_control_programmable/)

### 7. MOUNTING

Fixture slips over a 4"/100mm or into 5"/127mm O.D. pole. (Required .188" thick wall for 5"/127mm O.D. pole. Secured with three S/S 3/8-16x3/8" set screws)

#### Wall Mount Arm

- |        |        |
|--------|--------|
| WMA35U | WMA9D  |
| WMA36U | WMA9U  |
| WMA7   | WMA22U |

#### Pole Mount Arm

- |       |        |
|-------|--------|
| TRA5U | SLA1-2 |
| TRA6U | SLA8U  |
| SLA1  | SLA22U |

#### Pier Mount

- |     |     |     |
|-----|-----|-----|
| PM1 | PM2 | PM3 |
|-----|-----|-----|



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JOB  
 TYPE  
 NOTES

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**001022**



LUMINAIRE PERFORMANCE

Optical System	Secondary Lens or Shield	Distribution	Light Engine	Ordering Code												Drive Current	System Watts			
				3K			4K			5K										
				Delivered Lumens	Efficacy (Lm/W)	BUG Rating	Delivered Lumens	Efficacy (Lm/W)	BUG Rating	Delivered Lumens	Efficacy (Lm/W)	BUG Rating								
MicroCore	No Lens (Standard)	TYPE 2	T2-56LED	6697	52	2	0	2	8236	64	2	0	2	9051	70	2	0	2	700	129
		TYPE 3	T3-56LED	6737	52	2	0	2	8285	64	2	0	2	9104	71	2	0	2		
		TYPE 4	T4-56LED	6385	50	1	0	2	7858	61	1	0	2	8707	68	1	0	2		
		TYPE 5	T5-56LED	6648	52	3	0	1	8176	63	3	0	2	8985	70	3	0	2		
		45° Left	TL-56LED	6074	47	1	0	2	7184	56	1	0	2	7985	61	1	0	2		
		45° Right	TR-56LED	6074	47	1	0	2	7184	56	1	0	2	7895	61	1	0	2		
		HSS	TYPE 4	T3-56LED	5124	40	0	0	2	6135	48	0	0	2	6741	52	0	0		
	No Lens (Standard)	TYPE 2	T2-56LED	4693	57	1	0	1	5558	67	2	0	2	6172	75	2	0	2	450	83
		TYPE 3	T3-56LED	4733	57	1	0	2	5604	68	1	0	2	6227	75	1	0	2		
		TYPE 4	T4-56LED	4792	58	1	0	2	5675	69	1	0	2	6305	76	1	0	2		
		TYPE 5	T5-56LED	4970	60	3	0	3	5885	71	3	0	3	6539	79	3	0	3		
		45° Left	TL-56LED	4379	53	1	0	1	5180	63	1	0	2	5692	69	1	0	2		
		45° Right	TR-56LED	4379	53	1	0	1	5180	63	1	0	2	5692	69	1	0	2		
		HSS	TYPE 4	T4-56LED	3710	45	0	0	2	4442	54	0	0	2	4881	59	0	0		

\* DesignLights Consortium® Qualified Product



ELECTRICAL CHARACTERISTICS

Optical System	Ordering Code	LED Drive mA	System Watts	Driver						Dimming								
				Line Voltage		Amps AC		Min. Power Factor	Max THD (%)	Operating Temp. Range	Dimming Range	Source current out of 0-10V purple wire			Absolute voltage range on 0-10V (+) purple wire			
				VAC	HZ	120	277					Min	Typical	Max	Min	Typical	Max	
MicroCore	56LED	700	700	129	120-277	50/60	1.1	0.5	≥9	20	-30°C TO +40°C	10% TO 100%	0 mA	-	2 mA	-2.0 V	-	+15 V
		450	450	83			0.7	0.3										

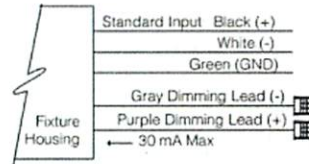
LED COLOR

Consult factory for Amber, Turtle Friendly, Gulf Coast and Observatory applications.

	Ordering Code		
	3K	4K	5K
CCT Average	3000K	4000K	5000K
CRI Minimum	≥ 80	≥ 70	≥ 70

WIRING LEADS

Luminaires not configured with wiHUBB or photo-control shall be provided with 0-10 purple and gray dimming leads.



TM-21 LIFETIME CALCULATION

Optical System	Ordering Code	Ambient Environment °C	Projected Lumen Maintenance (% vs. Khrs)					Reported L70
			15	25	50	TM-21* 60	100	
MicroCore	56LED	15	98	98	97	96	94	>60Khrs
		25	98	97	96	95	93	
		40	96	95	93	92	89	



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JOB  
 TYPE  
 NOTES

**Exhibit 21**  
**SSDP2016-00414**  
**001023**



## SPECIFICATIONS

### HOUSING

- Luminaire housing and lens frame shall be spun aluminum, sealed with continuous silicone rubber gaskets.
- Standard configurations do not require a flat lens, optional lenses shall be tempered glass
- All internal and external hardware shall be stainless steel.
- Optical bezel finish shall match the luminaire housing.

### OPTICAL

- Patent pending MicroCore™ LED modules shall independently aim each light emitting diode (LED) in both horizontal rotation and vertical tilt angle.
- LEDs shall be mounted to a metal printed circuit board assembly (PCBA) with a uniform conformal coating over the panel surface and electrical features.
- LED optics shall be clear injection molded PMMA acrylic.
- MicroCore™ PCBA and optic shall be sealed to a die-cast anodized aluminum heat sink with an injection molded silicone rubber gasket. IP66.

### ELECTRICAL

- Luminaires shall have integral surge protection that shall be U.L. recognized and have a surge current rating of 10,000 Amps using the industry standard 8/20uSec wave and surge rating of 372J.
- Drivers shall be U.L. recognized with an inrush current maximum of <20.0 Amps maximum at 230VAC.
- Drivers shall not be compatible with current sourcing dimmers, consult factory for current list of known compatible dimming systems, approved dimmers include Lutron Diva AVTV, Lutron Nova NFTV and NTFTV.
- LifeShield™ shall be provided with all configurations for added protection in the event of abnormally excessive high ambient temperature conditions
- Type 4 distribution with optional House Side Shield not available with clear or diffused glass lenses. Factory installed House Side Shield is optimized for Type 4 distribution and not recommended for use with Type 2 or 3 distribution and not available with type 5 distribution.

### CONTROLS

- SCP shall have an integral surge protection device with a current rating of 10,000 Amps using the industry standard 8/20uSec wave and surge rating of 372J
- Sensor not intended for use with additional photo-control, wireless control or dimming systems.

### PHOTOCELL / EGRESS ADAPTERS

- Adapter(s) shall slip over a 4"/100mm DIA. pole with the luminaire or arm slipping over the adapter to add a total of 4.5"/114mm to the overall height. Adapter(s) shall be prewired, independently rotatable 359°, and have a cast access cover with an integral lens and lanyard.
- Photocell adapter shall include an internal twist lock receptacle. Photocell by others.
- Egress adapter shall require an auxiliary 120 volt supply for operation of an integral MR16 lamp in the event of emergency. The lamp may be aimed and locked into position with an adjustment range of 15°-45°. Adapter shall have a socket that accepts miniature bi-pin MR16 lamps up to 50 watts, lamp by others.

### SERVICING

- Electrical assembly shall be mounted to a prewired internal service tray.

### ARM MOUNTING

- Luminaire shall slip over mounting arm and secured with three stainless steel ¼"-20 screws.

### FINISH

- Luminaire finish shall consist of a five stage pretreatment regimen with a polymer primer sealer, oven dry off, and top coated with a thermoset super TGIC polyester powder coat finish.
- Luminaire finish shall meet the AAMA 605.2 performance specification which includes passing a 3000 hour salt spray test for corrosion resistance.

### CERTIFICATION

- Luminaire shall be listed with ETL for outdoor, wet location use, UL1598, UL 8750 and Canadian CSA Std. C22.2 no.250.

### WARRANTY / TERMS AND CONDITIONS OF SALE

Download:

<http://www.hubbellighting.com/resources/warranty/>

**LED lighting facts**  
A Program of the U.S. DOE

Light Output (Lumens)	7958
Watts	127.14
Lumens per Watt (Efficacy)	63
Color Accuracy Color Rendering Index (CRI)	75
Light Color Correlated Color Temperature (CCT)	4183 (Bright White)

Color scale: Warm White (2700K), Bright White (3000K), Daylight (4000K), Cool White (5000K)

Visit [www.lightingfacts.com](http://www.lightingfacts.com) for the Label Reference Guide.

Registration Number: 2013-743028-1101102110  
Model Number: SLVT-TA-0010-04-700  
Type: Luminaire - Downlight



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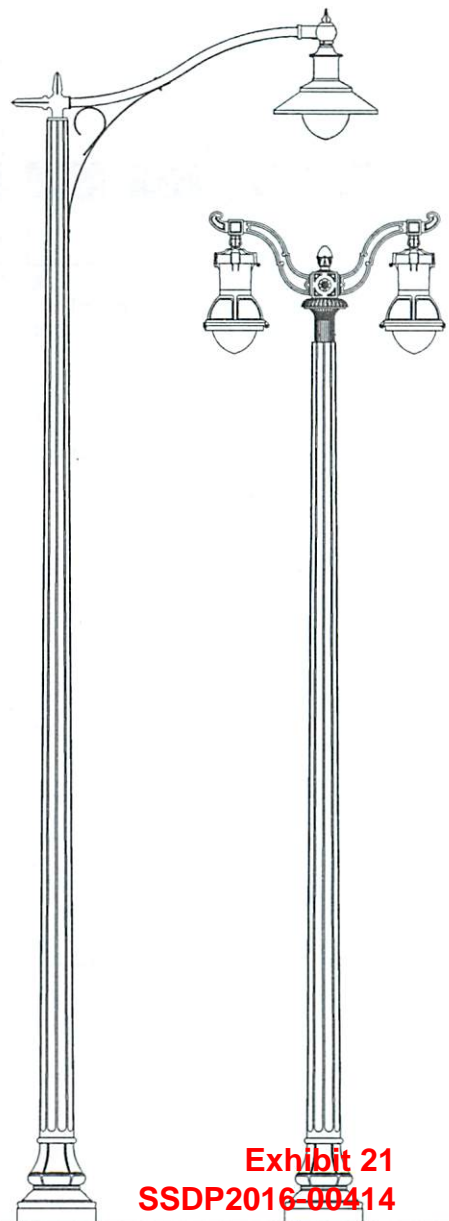
JOB \_\_\_\_\_  
TYPE \_\_\_\_\_  
NOTES \_\_\_\_\_

**Exhibit 21**  
**SSDP2016-00414**  
**001024**



# THE WASHINGTON

The Washington design has a long history. Originally installed around the Capital Hill & White House grounds in 1910, it is now widely used throughout the DC area and has become extremely popular across the country. StressCrete is proud to introduce a spun concrete 10 fluted version of this historic design. It is available in heights from 5' to 30' as well as a lighted and nonlighted bollard.



**Exhibit 21**  
**SSDP2016-00414**  
**001025**



## Specification Details\*

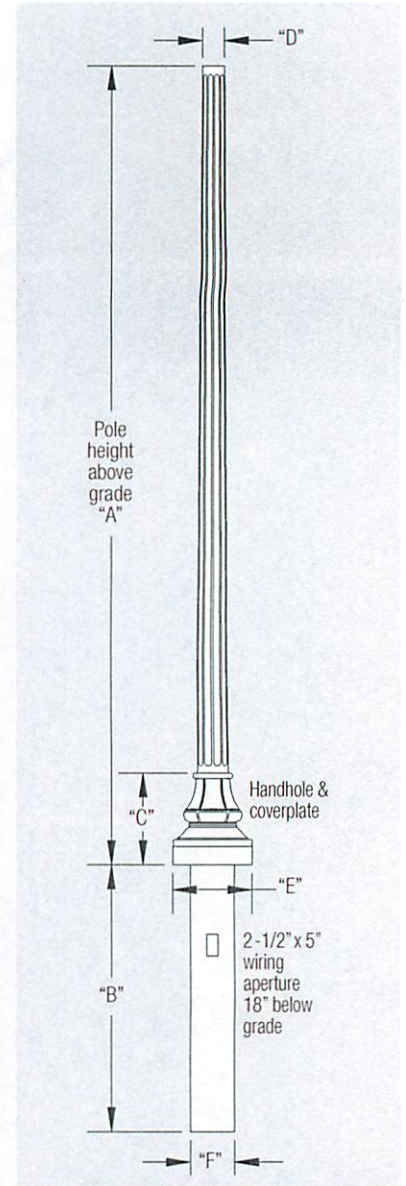
Description	Catalog Number	"A" Pole Height Above Grade	"D" Tip Dimension	"C" Stepped Section Height	"E" Flare	"B" Direct Burial Length & "F" Dia.	Pole Weight Direct Burial	Pole Weight Base Plate
Washington 10'	KWC10	10' 0"	5 3/4"	20 1/2"	18"	4' 6" x 10"	860 lbs	655 lbs
Washington 13'	KWC13	13' 0"	5 1/4"	20 1/2"	18"	4' 6" x 10"	925 lbs	720 lbs
Washington 15'	KWC15	15' 0"	5"	20 1/2"	18"	4' 6" x 10"	1100 lbs	895 lbs
Washington 18'	KWH18	18' 0"	6 3/4"	24"	21"	5' 0" x 12"	1660 lbs	1390 lbs
Washington 20'	KWH20	20' 0"	6 3/8"	24"	21"	5' 0" x 12"	1750 lbs	1480 lbs
Washington 25'	KWH25	25' 0"	5 3/4"	24"	21"	5' 0" x 12"	1900 lbs	1630 lbs
Washington 30'	KWH30	30' 0"	5"	24"	21"	5' 0" x 12"	2140 lbs	1870 lbs

\* For bollard catalog information please see the bollard section in the King Luminaire catalog or visit our website at [www.StressCreteGroup.com](http://www.StressCreteGroup.com)

## How to Catalog for Washington Concrete Pole

Pole Style	Finish	Footing Details	Coating
KWC KWH	E – Etched Finish	DB – Direct Buried FBP – Flush Baseplate SBP – Stub Baseplate	NA – Non Acrylic A – Acrylic AG – Anti Graffiti Coating***
<b>KWH</b> <b>30'</b>	<b>E</b> <b>40</b>	<b>DB</b> <b>140 30/30</b>	<b>GFI</b> <b>NA</b>
<b>Height</b> 5' - 30'	<b>Color**</b> 10 – Midnight Lace 11 – Eclipse Black 30 – Salt & Pepper 40 – Pearl Gray 90 – Saluki bronze	<b>Tenon (Post Top Mount)</b> Specify Tenon Size For example 140 30/30 = 2 7/8" OD & 3" long	<b>Options*</b> DR – Duplex Receptacle GFI – Ground Fault Duplex Receptacle SR – 1 Outlet LRN – Ladder Rest BPC – Base Plate Cover AB – Anchor Bolts BA – Banner Arms FH – Flag Holders

\* Consult website for full listings. \*\* See decor colors on page 2 for full selection of colors.  
\*\*\*Anti Graffiti Coating is extra, consult factory for more details.

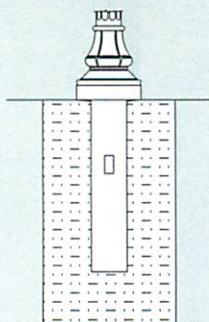


## Footing Details

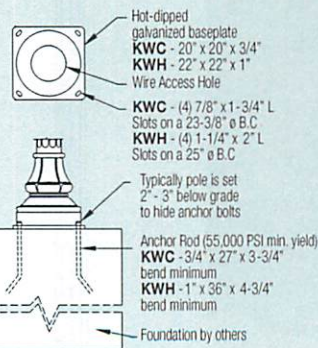
### Direct Buried

(Simple and Cost Effective)

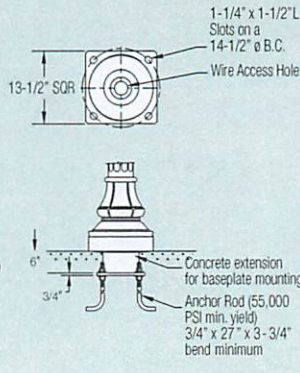
1. Auger the setting hole.
2. Set pole in hole and plumb straight.
3. Backfill\* with required backfill tamping every 4" to 6".



### Baseplate Option 1: FBP



### Baseplate Option 2: SBP



\* Generally the excavated material can be used for backfill, in some situations better backfill may be required.

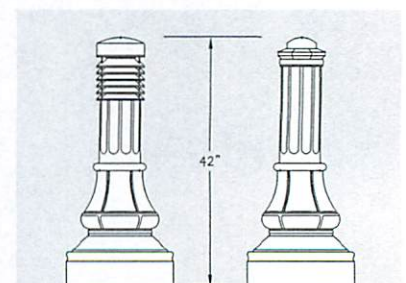
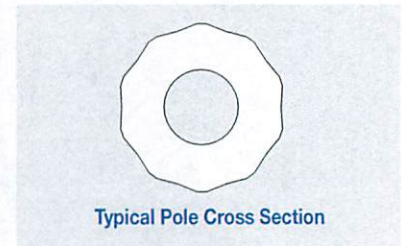
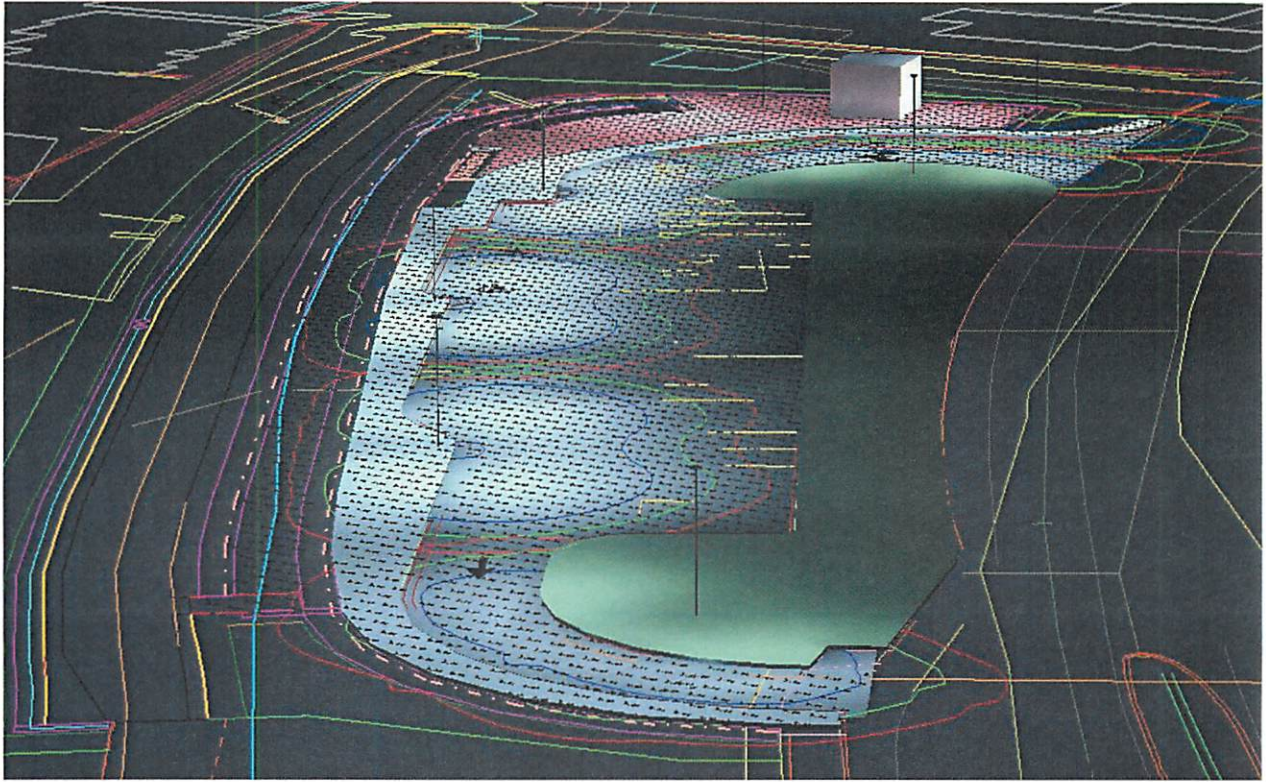
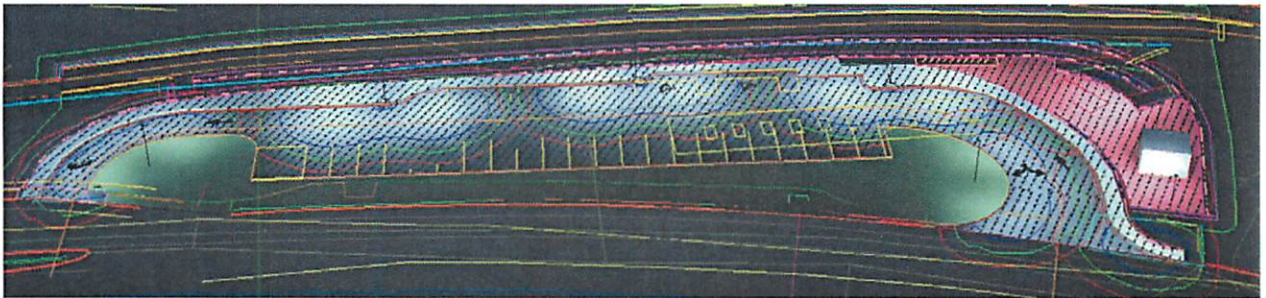


Exhibit 21  
SSDP2016-00414  
001026





Parking Lot Illumination Rendering – Facing North



Parking Lot Illumination Rendering – Facing West